

WHAT IS CLAIMED IS:

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1. A manufacturing method for a semiconductor device comprising the steps of:

semi-full dicing a semiconductor wafer so as to leave a dicing residual portion with a predetermined thickness between devices on the semiconductor wafer;

forming a protective layer having a chemical etching resistant property on an element formation face of the semiconductor wafer;

chemically etching the semiconductor wafer having the protective layer formed on the element formation face from the rear face side so as to polish the rear face of the semiconductor wafer, so as to remove the dicing residual portion to divide the semiconductor wafer into individual semiconductor chips, and so as to remove damaged areas in a cut face of the semiconductor wafer resulted from the semi-full dicing process.

2. The manufacturing method for a semiconductor device as defined in claim 1, further comprising the step of:

prior to the semi-full dicing process, carrying out an electrical test on the semiconductor wafer by means of probing.

3. The manufacturing method for a semiconductor device

as defined in claim 1, further comprising the step of:

removing the protective layer from the semiconductor chips that have been individually divided, after the chemical etching process.

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4. The manufacturing method for a semiconductor device as defined in claim 1, wherein in the semi-full dicing process, the semiconductor wafer is subjected to semi-full dicing from the element formation face so as to leave a dicing residual portion with a predetermined thickness on the side of the rear face that is opposite to the element formation face of the semiconductor wafer.

5. The manufacturing method for a semiconductor device as defined in claim 4, wherein in the protective layer forming process after the semi-full dicing process, the protective layer having a chemical etching resistant property is formed on the element formation face of the semiconductor wafer.

6. The manufacturing method for a semiconductor device as defined in claim 1, wherein in the semi-full dicing process, the semiconductor wafer is subjected to semi-full dicing from the side of the rear face that is opposite to the element formation face so as to leave a dicing residual

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portion with a predetermined thickness on the element formation face side of the semiconductor wafer.

7. The manufacturing method for a semiconductor device as defined in claim 6, wherein in the protective layer forming process before the semi-full dicing process, the protective layer having a dicing protective property and a chemical etching resistant property is formed on the element formation face of the semiconductor wafer.

8. The manufacturing method for a semiconductor device as defined in claim 1, further comprising the step of:

prior to the semi-full dicing process, polishing the rear face that is opposite to the element formation face of the semiconductor wafer,

wherein in the chemical etching process, damaged areas on the rear face of the semiconductor wafer resulted from the rear-face polishing process are removed.

9. The manufacturing method for a semiconductor device as defined in claim 1, wherein the protective layer is a film having a chemical etching resistant property.

10. The manufacturing method for a semiconductor device as defined in claim 1, wherein the protective layer is a

chemical etching resistant film of a ultraviolet separation type, which has a reduction in adhesive strength upon irradiation with ultraviolet rays.

11. The manufacturing method for a semiconductor device as defined in claim 1, wherein the protective layer is a chemical etching resistant film of a thermal foaming type, which has a reduction in adhesive strength upon application of heat.

12. The manufacturing method for a semiconductor device as defined in claim 1, wherein the protective layer is a chemical etching resistant film of a sticking type, which has an adhesive strength that allows the individually divided semiconductor chips to be separated from the protective layer one by one.

13. The manufacturing method for a semiconductor device as defined in claim 1, wherein the protective layer is held by a protective layer holding means with a uniform tension.

14. The manufacturing method for a semiconductor device as defined in claim 13, wherein the protective layer holding means is placed on a face that is opposite to the face on which the semiconductor wafer with the protective layer is

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15. The manufacturing method for a semiconductor device as defined in claim 13, wherein the protective layer holding means is placed on the same face on which the semiconductor wafer with the protective layer is affixed.

16. The manufacturing method for a semiconductor device as defined in claim 1, wherein the protective layer has a peripheral portion on which a protective layer holding means having a chemical etching resistant property is placed in a manner so as to surround the entire circumference of the semiconductor wafer.

17. The manufacturing method for a semiconductor device as defined in claim 16, wherein the protective layer holding means has a ring shape with a flat bonding face for the protective layer.

18. The manufacturing method for a semiconductor device as defined in claim 17, wherein the protective layer holding means has a draining means for draining etchant remaining inside the protective layer holding means during the chemical etching process.

19. The manufacturing method for a semiconductor device
as defined in claim 18, wherein the draining means is
provided as grooves extending in a radial manner from the
center of the semiconductor wafer.